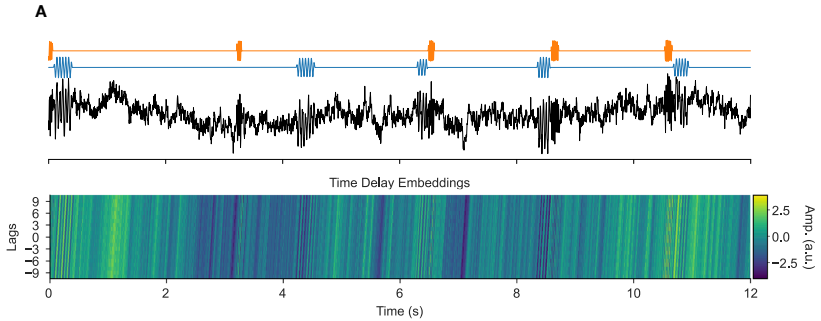
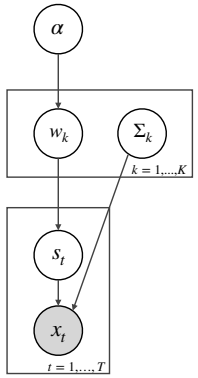


B



C

Dirichlet Process (Truncated Stick-breaking)

Draw concentration: $\alpha \sim \text{HalfCauchy}(1)$

Draw stick-breaking weights: $v_k \sim \text{Beta}(1,\alpha), k = 1:K-1$

Construct mixture weights: $w_1 = v_1, \quad w_k = v_k \prod_{i<k}(1-v_i), \quad w_K = \prod_{i=1}^{K-1}(1-v_i)$

Covariance estimation (for each state, $k = 1:K$)

Draw scales: $\sigma_{k,j} \overset{i.i.d.}{\sim} \text{HalfCauchy}(1), j = 1:d$

Draw correlation factor: $L_k \sim \text{LKJCholesky}(d, \eta = 1)$

Construct covariances: $\Sigma_k = \text{Diag}(\sigma_\mathbf{k}) L_k L_k^T \text{Diag}(\sigma_\mathbf{k})$

Gaussian Mixture Model (for each data point, $t = 1:T$)

Draw latent states: $s_t \sim \text{Categorical}(\mathbf{w})$

Generate data: $\mathbf{x}_t \,|\, s_t \sim \text{N}(\mathbf{0}, \Sigma_{s_t})$